U.S. AIR FORCE

Bending the Cost Curve (BTCC) Government – Industry Engagement Process (G-IEP) for Cost Capability Analysis (CCA)

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Forward

With the implementation of Cost Capability Analysis (CCA), the Secretary of the Air Force (SECAF), the Honorable Deborah Lee James, recognized the need to develop a Government-Industry Engagement Process (G-IEP) that will reform how the Air Force involves industry in the requirements development process. The Air Force needs to understand which requirements are the most costly and/or risky, which requirements could result in the most cost savings if adjusted, and where the knee in the cost capability curve is for the most costly or risky requirements. More affordable solutions can be identified to meet warfighters' needs by working with industry partners during the requirements definition process.

The Director of Transformational Innovation, Office of the Assistant Secretary (Acquisition) is partnering with industry through Bending the Cost Curve (BTCC) projects to find more efficient ways of allocating resources and harnessing the best capabilities for the lowest cost. Government- Industry Engagement for CCA was selected as a BTCC project to address the SECAF's need. Four acquisition programs at various phases of the life cycle were selected by Assistant Secretary of the Air Force for Acquisition (SAF/AQ) as pilot programs for the development of the G-IEP: Advanced Pilot Training (T-X), Long Range Stand Off Cruise Missile (LRSO CM), Space Based Infrared Systems (SBIRS) Follow-on, and 5th to 4th Generation Gateway Increment II. Lessons learned were used to build considerations in this G-IEP guidebook.

The Department of Defense relies on the commercial market for products and services. Market research is conducted to determine availability of products and services, identify market practices and to become aware of the latest developments. Current guides on market research generally assist teams in determining if the commercial market can meet capability requirements. This G-IEP guidebook expands upon traditional market research guidance to consider leveraging industry insights on the cost/capability trade space to more affordably meet user requirements. It is not a guide on how to conduct a cost capability analysis. Rather, the intent is to gather information to better inform Air Force capability requirement definition. Specifically, the Air Force is looking to collect information to inform the requirements process such as cost data, impacts to operational capability, schedule and risk assessments and the like. The AF is not seeking specific material solutions or product recommendations from industry by using this process.

The Air Force Acquisition Strategy Panel (ASP) and Configuration Steering Board (CSB) templates require the inclusion of industry during the requirements development process and in the tradeoff analysis between cost and operational capability. Adopting considerations provided in this guidebook will help acquisition programs meet acquisition forum reporting requirements.

SECTION I –GENERAL GUIDANCE

"***Bending the Cost Curve is a targeted initiative to encourage innovation and active industry partnerships to improve the way we procure our systems and to drive down cost.***" The Honorable Deborah Lee James, Secretary of the Air Force, Atlantic Council, Washington, DC, 14 Jan, 2015

1.1 Purpose of BTCC G-IEP for CCA and this Guidebook

The purpose of BTCC Government-Industry Engagement Process (G-IEP) is to improve how Air Force requirements are developed and refined by considering unique industry insights on capability, cost, and technical performance for Air Force acquisition programs. Secretary James articulated this intent during her speech at the Atlantic Council on 14 Jan 15 when she said, "What Bending the Cost Curve does for CCA is develop that specific industry engagement process, and we hope, will reform the way we talk to industry about requirements." This guidebook establishes a process for conducting the government-industry engagement throughout the requirements definition process and acquisition lifecycle, which strives to produce and field more affordable weapons systems through partnering and enhancing relationships with industry.

This guidebook provides ideas to consider for process implementation. The term "consideration" can hold different meanings to different parties. For this process, considerations should be taken as suggestions to consider as opposed to the legal definition of "consideration." The considerations listed in each of these steps are intended to provoke thought by providing ideas to think about when performing the steps.

The 4-step process for engaging with industry to help the Air Force better define requirements is not "one-size fits all." This is a top-level process that needs to be tailored to the unique circumstances that differentiate one program from another. This process should be implemented in a way that is appropriate for the particular program.

1.2 BTCC G-IEP for CCA - Desired Outcomes

The list below identifies the desired outcomes for this BTCCproject

- Widen materiel solution tradespace options based on industry insights
- Improve requirements definition by leveraging industry's understanding of the solution space

- Reduce costs through more efficient contractor-developed design configurations
- Understand the top cost drivers for designs through contractor provided cost data
- Improve the clarity of technical requirements based on industry feedback and inputs
- Adjust operational and/or technical requirements to meet affordability targets

1.3 Intent and Scope of Guide

Program technologies, product domain, lifecycle status, local practices of AF Acquisition Centers, and other circumstances render each acquisition program unique. In an attempt to accommodate the uniqueness of each program, this guide was developed as a generic process description and framework. It provides a process for Government – Industry engagement to collect source data that will be incorporated into Cost Capability Analysis.

Intended users of this guide include all personnel involved with the development and documentation of operational capability requirements as well those who perform requirements analysis, development planning, early system engineering (with respect to evaluating alternative approaches to provide desired capabilities), and System Program Offices personnel charged with engineering and acquiring a materiel solution. In applying this guide, the team should:

- Tailor the process to fit the unique circumstances of the program
- Focus engagement with industry on the key pieces of data needed to support the CCA
- Apply the process in an effective manner, in consonance with the Requirements and Acquisition Strategies, and within the given time and resources available
- Properly protect and safeguard all proprietary, trade secret and source selection data as competition sensitive and in accordance with classification markings at all times
- Avoid Conflicts of Interest and preferential treatment of one entity over another
- Ensure compliance with Safeguarding Covered Defense Information and Cyber Incident Reporting
- Ensure detection and avoidance of counterfeit electronic parts, especially in the early acquisition stage
- Maintain close working relationships between the acquisition program office and the requirement sponsor/user

1.4 Background

This section provides the background on how the CCA and BTCC initiatives intersected to form this BTCC-CCA Government-Industry engagement initiative.

CCA

Cost Capability Analysis is an analytic technique that examines the tradespace between operational capability and lifecycle costs. The big-picture concept is that by evaluating tradeoffs between cost and capability acquisition programs can slide down the cost curve to become more affordable while still satisfying the needs of the warfighter. A CCA goal is to use the knowledge of capability trade-offs to determine where a small trade in capability (e.g. top speed of an aircraft) could be adjusted for large cost savings. It can also show that an increase in capability (e.g. meeting objective values) can be obtained with marginal cost increase to the program. A team consisting of acquisition program office personnel and representatives from the end-user and requirements sponsor is required to properly conduct CCA. For additional detail on CCA please reference the CCA Handbook, CCA training materials, or contact the CCA home office, AFLCMC/OZA.

BTCC G-IEP for CCA was one of nine recommendations to implement CCA in the Air Force. CCA began in 2011 when a Fall CORONA task (Task-9) called for a better understanding of the effects of requirements on cost and cycle time to inform affordability decisions. The solution to this task was to determine explicit steps to vet affordability and cycle-time trades in the requirements and acquisition processes. In 2012, this CORONA task was then folded into a new initiative called Acquisition Continuous Process Improvement 2.0 (CPI 2.0). Acquisition CPI 2.0 was signed out by the CSAF and SECAF and mandated that cost/schedule vs. capability curves be presented throughout the program lifecycle (now codified in AFI 10-601 and AFI 63-101). Shortly after Acquisition CPI 2.0 was signed out, SECAF directed the AF to work with pilot programs to learn what it takes to properly conduct CCA. A key finding from one of the SECAF-directed pilot programs was that insight at the right time from industry on cost drivers and tradespace can be extremely beneficial in helping define operational capability requirements and affordability caps for Air Force programs.

In Jun 2014 the Air Force Requirements Oversight Council (AFROC) and the Integrated Life-Cycle Management- Executive Forum (ILCM-EF) approved nine CCA Implementation recommendations, one of which was to “leverage insights from industry.” The intent of this action was to create a new Bending the Cost Curve (BTCC) initiative with the purpose of improving how Air Force requirements are developed and refined by considering unique industry insights on capability, cost, and technical performance for Air Force acquisition programs.

BTCC

The evolution of BTCC began in 2014. The Secretary of the Air Force, Deborah Lee James, and Air Force Chief of Staff, Gen Mark A. Welsh, committed to making every Air Force dollar count

and maximizing the buying power of increasingly scarce resources. During the spring of 2014, the two leaders issued direction to the Air Force acquisition community to intensify its communications and collaborations with defense industry leaders addressing the rising cost and prolonged development times of weapon systems. In so doing, they were seeking to "bend the cost curve" ensuring weapons and other systems required to support the Air Force today, and in decades to come, are affordable and available to the warfighter in a timely manner.

To further the CSAF and SECAF intentions, the Assistant Secretary of the Air Force for Acquisitions (SAF/AQ), Dr. William LaPlante, launched the Bending the Cost Curve (BTCC) Initiative. The purpose of BTCC is to identify and implement acquisition reforms that are focused on enhancing collaboration with industry in areas that will reduce acquisition costs and development schedules for current and future weapons systems. The insights that one CCA pilot program gained from working with industry during its Technology Maturation and Risk Reduction (TMRR) phase was promising enough for SAF/AQ to include BTCC G-IEP for CCA as one of the eleven BTCC projects in 2015.

1.5. CCA and G-IEP across the Program Life Cycle

The CCA process injects analytic rigor into tradespace analyses and informs many decisions across the program life-cycle. The character of the Cost Capability Analysis (CCA) will vary based on the decision the analysis is supporting, and therefore the information sought after from the industrial base through the G-IEP in order to conduct the CCA will vary across the life cycle as well. Always keep in mind that the information being requested from industry will be used in the CCA, which is a practice used to inform decisions.

SECTION II – BTCC G-IE Process for CCA

2.1 Introduction

Part 7 (Acquisition Planning) and Part 10 (Market Research) of the Federal Acquisition Regulation (FAR), as well as DFARS Part 210, describe the requirement to conduct market research for all acquisitions. Market research means reviewing existing systems, subsystems, capabilities, and technologies that are available to meet the needs of the DOD in whole or in part and collecting and analyzing information about capabilities within the market to satisfy agency needs.

As outlined in the 2016 National Defense Authorization Act, agency acquisition personnel are permitted and encouraged to engage in responsible and constructive exchanges with industry, so long as those exchanges are consistent with existing law and regulation and do not promote an unfair competitive advantage.

The process of engaging with industry during the development of requirements, as described in this section of the guidebook, is a form of market research. It is a continuous process that begins in the early stages of the lifecycle to collect, review and analyzes information. The government-industry engagement process discussed herein is specific to the operational capability requirements of a specific program/acquisition.

The engagement with the industrial base to obtain data/information, as mentioned earlier, is life-cycle context sensitive. In that regard, the type, level, and fidelity of data/information will vary in maturity and complexity. In general, the identification of appropriate information along with information sources should be initiated early and continue across the life-cycle.

Once information sources are identified, information is collected from those sources and then evaluated by a broader team of stakeholders. Following the appropriate examination by the broader team of stakeholders, the data/information can then become useful inputs to the CCA. The culmination of the process is the incorporation of the industry data/information into the CCA in which results in improved decision-making for Air Force senior leaders.

One additional point to make is that the 4-step market investigation process described in this section does not apply to unsolicited proposals. According to the FAR, unsolicited proposals are encouraged, but handled much differently than proposals/market investigations related to a negotiated acquisition. Reference FAR 15.6 when dealing with unsolicited proposals.

2.2 Process Summary

Step 1 – Establish Team/Conduct Training

Step 2 – Identify Data and Sources

- Identify Information/Data Desired from Industry
- Understand How Industry's Data Will Be Used
- Identify Sources of Information/Data
- Guidance for Communication with Industry
- Issue Information Requests
- Establish Source Database

Step 3 – Assess Source Information/Data

- Collect Relevant Information/Data
- Review and Analyze Data with CCA Team
- Organize Data for CCA

Step 4 – Utilize Data in CCA

- Set Up CCA in Support of the Desired Outcomes
- Conduct CCA
- Use CCA to Improve Decision-Making

Process-Level Considerations:

- Develop strategy to focus on the key pieces of data/information needed to support the CCA
- Tailor this process as necessary
- Ensure funding is available to support the full requirements development strategy, which should include the CCA
- Be extremely clear on what information/data is being requested (more specific detail is better than not enough detail)
- Follow all statutory and regulatory guidelines for communicating with the defense industrial base (see Section 2.4.4 and Appendix D for references)

2.3 Step 1 – Establish Team/Conduct Training

Market research helps to inform and optimize the acquisition strategy for meeting a requirement and requires active participation of all acquisition team members as appropriate. As a part of this research, the government-industry engagement process outlined in this guidebook is used to inform tradespace analysis of operational requirements and requires active participation from both the acquisition and requirements communities. A focus on identifying all stakeholders, the rules of engagement for controlled communications with industry, and training as early as possible is a must for a successful activity.

The acquisition community uses very formal instruments and processes that strictly adhere to the FAR and other acquisition policy on a regular basis. They also are well-versed in the rules associated with protecting a contractor's proprietary information. Therefore, it is highly recommended that Contracting and Legal representation is included in the process as early as possible.

Personnel working in organizations outside the acquisition purview are often less-familiar with the constraints placed on activities such as engaging with private contractors and protecting their proprietary information. Regardless of organizational background, everyone is bound to adherence to the FAR.

Considerations:

- Understand the function of market research in the acquisition and for leveraging industry insights on the cost/capability tradespace
- Identify roles and responsibilities and ground rules for engaging with industry
- Discuss different perspectives on how formal and informal interactions should occur
- Review all regulatory and statutory law to include FAR Part 10
- Identify workplace practices for safeguarding data

2.4 Step 2 – Identify Data and Sources

The Team identifies the information it desires along with various industry sources that are available to support the CCA tradeoff analysis.

2.4.1. Identify Information/Data Desired from Industry

The first task is to identify the information/data wanted from industry. A program's requirements/needs should be critically diagnosed, and the unique insights industry may possess that would help further refine those requirements should be determined. Working with the Requirements Sponsor will help to determine which capabilities they wish to consider for trades (typically the top cost, schedule and risk drivers) and to focus data collection in those areas. Industry's sharing of this information can lead to higher confidence in the tradeoffs

evaluated and ultimately lead to better-informed program decision-making. Care should be taken to not identify too large of a data set, as the analysis can become labor intensive.

Example information to request: top operational capability cost drivers, top design cost drivers, alternative design configurations and cost drivers associated with those designs, operational capabilities with high incremental/marginal costs, and operational (or design) impacts to reductions in the most costly requirements. See Appendix B for an example template.

A program's data requests should not be limited by what other programs previously requested. A focused strategy for data/information is needed to better inform those tradeoffs that need to be evaluated.

Considerations:

- What program data is low-fidelity or lacking altogether?
- What operational capability requirements are a program's primary cost drivers?
- What operational capabilities have the highest incremental/marginal costs?
- What are the operational/design/cost impacts to reductions in the most costly requirements?
- What data could better inform tradeoffs between cost, schedule, and capability?
- What is the appropriate level of data to request and what will be the classification of the data?
- Will industry be willing to share what you requested?
- Will this information cost money? Is money available, if needed?

2.4.2 Understand How Industry's Data Will Be Used

It is imperative that the team has a thorough understanding of how they will utilize any and all data received from the defense industrial base. First, the team needs to understand what decision point the program is at and what the key decisions are that need to be made at that point (reference the 12 decision points in Appendix A). From there, the team should understand what the questions are that need to be answered to inform those key decisions. Finally, the team needs to identify what data/information is needed to answer those questions. Collecting quality data from industry without understanding how to properly utilize it will lead to undesirable results. The thought pattern described in this paragraph will help the Team think through how they will use the data they receive from industry to answer the questions that will inform the decision at hand.

Considerations

- What are the key questions that need to be answered at this decision point?

- How will the data being requested answer those questions and ultimately inform the decisions being made?
- How will this data be used to inform the requirements development process?
- How will this data be used to inform the acquisition strategy?
- Who will this information be shared with?
- Become familiar with statutory and regulatory policy for proper handling and safeguarding of proprietary information (see Appendix D)

2.4.3. Identify Sources of Information/Data

Once the team has a clear understanding of the information/data desired from the defense industrial base, the next step is to identify where to go in order to collect that data. There is a myriad of sources out there, and this step of the process is intended to help aid the team in generating ideas for sources available. The list below identifies some of the common sources but is not all-inclusive.

Fedbizopps: www.fbo.gov. Fedbizopps is a good source to search previous Government efforts to fulfill requirements, search sources sought, draft requirements documents and contracts, etc.

Known Government Contractors: Identify known companies that historically have provided the requested type of data or are known to have the capability to provide it. Some companies might be glaringly obvious, but data sources should not be limited to the major defense contractors. The local Small Business Office or local reps from associations such as National Defense Industrial Association (NDIA) or Aerospace Industries Association (AIA) may be great sources to aid in identifying defense contractors that are lesser known.

Defense Business Publications: There are quite a few defense business publications that can aid in the search for information sources. Many defense business publications list and review industry businesses and players. It is important to ensure the information in any publication is current and from a reputable source, and caution should be used to not confuse marketing pitches with actual evidence that validates a legit information source.

Relevant Conferences: Attendance at conferences associated with a product area is another avenue of information for sources. Further, industry may provide the very data desired as a participant at various conference sessions through the presentation of papers, demonstrations, or industry exhibits.

Web Searches: Companies are generally interested in displaying their products and capabilities and do so on the web. Information about products and services are often available. In addition, most companies provide contact information that can be used to make additional

inquiries. Be careful not to take information from websites at "face value", validate or obtain second source confirmation of the data

2.4.4 Guidance for Communication with Industry

The Air Force encourages its leaders to communicate with industry on matters of mutual interest for the purpose of learning about private sector products, systems, and innovations that might improve warfighting capabilities. Early, frequent and clear communication helps the Air Force maximize materiel and service support to the warfighter, set realistic expectations and technologically achievable requirements, and enhance the ability of organizations to meet cost, schedule and performance objectives.

The Office of Federal Procurement Policy (OFPP) issued two memorandums on "Myth-Busting" and furthering communication with industry.

It is highly recommended acquisition teams review these two memorandums at:
https://www.whitehouse.gov/sites/default/files/omb/procurement/memo/Myth-Busting.pdf
https://www.whitehouse.gov/sites/default/files/omb/procurement/memo/myth-busting-2-addressing-misconceptions-and-further-improving-communication-during-the-acquisition-process.pdf

There are however, strict guidelines that must be followed when communicating with industry. Below is a list of guidelines that must be adhered to.

- Avoid the preferential treatment of one entity over another, whether actual or perceived. Ensure inclusion of all interested or potentially interested parties; providing a consistent message to all (Competition in Contracting Act (10 U.S.C. 2304))
- Do not disclose proprietary or source selection information (Procurement Integrity Act (41 U.S.C. 423)). Air Force officials may not disclose trade secrets or other proprietary information without permission of the owner. Protect procurement-sensitive information and information that would not otherwise be disclosed to the public under the Freedom of Information Act.
- Ensure all data is clearly marked and safeguarded as appropriate. The responsibility to clearly mark proprietary or trade secret information lies with the owner.
- Ensure all source selection participants, to include Government employees and advisory and assistance (A&AS), sign a nondisclosure agreement (NDA).
- AF officials may not participate in a matter presenting an actual or apparent conflict of interest. (Conflict of Interest Prohibition (18 U.S.C. 208))
- When in doubt, reference the FAR. In particular, FAR Part 15 will serve as a great reference for protecting information.

- U.S. Air Force Annual Ethics Training provides extensive information regarding interaction with contractors.
- Develop an external strategic communication plan to keep industry informed and involved early and throughout the requirements refinement phase. Transparency provides greater potential for a wider trade space.
- Develop an internal communication plan to guide communication with industry. Messaging is critical to create a greater willingness to share information with industry sooner and should be viewed as a best practice for CCA.

2.4.5 Issue Information Request

The next task in this step is to request the data identified in section 2.4.1 from industry. There are many ways in which this can be accomplished. The program shall consult with the Contracting Officer who will select the best means by which this is accomplished. Contracting Officers are well-trained and experienced in issuing the various types of instruments listed below. The following lists means for requesting information from industry via both contracted and non-contracted efforts.

- Request for Information (RFI)
- Broad Agency Announcements (BAA)
- Draft Request for Proposal (D-RFP)
- Request for Proposal (RFP)
- Industry Days
- Sources Sought Notice

Example: A program recently made inquiries in an RFI on the scope of work required for tradespace analysis to be conducted around 6 operational capability requirements. The information collected included the modifications necessary to achieve the lower end versus the higher end of the tradespace, the amount of time necessary to achieve that capability, and the approximate costs to achieve the upper and lower bounds of the capability. As a result of the analysis, the program determined that trading two of the requirements was not necessary because delivering the high end of the capability was cost prohibitive. It also helped the warfighter scope what they were willing to pay for achieving the high end of the other four requirements. This proved effective at informing the RFP.

Considerations:

- The RFI is an excellent tool for requesting information on specific capabilities. Clearly communicate to industry the tradespace available and request cost at various data points within the boundaries. Do not leave it open-ended as that can drive the analysis scope to levels making it difficult to arrive at a consensus on the capability.

- The form of the data should be specified in the request for information/data outlining the information required (i.e., a cost estimate with no supporting rationale is not worthy of consideration.)
- In some instances it may be necessary to issue a contract vehicle to collect the needed data. It is common for FFRDCs to conduct this type of work to avoid the OCI concern.
- If funding will be provided to the contractor, this contractual action will take place between the program office contracting officer and the contractor. The timing of the request can be a critical factor. If the objective is to collect data that will inform the definition of requirements, issue the request with plenty of lead time to collect responses and use the information collected to inform the requirements.

Ground Rules and Assumptions

The request must include Ground Rules and Assumptions (GR&As). Previous programs have found it very beneficial to include GR&As. The intent of the GR&As is to provide all the additional details and clarification pertaining to the request in order to provide industry a deeper understanding of why the request is being issued. The GR&As should be as thorough as deemed appropriate by the issuing program office. They will also assist in receiving as close to an "apples-to-apples" comparison of data when multiple sources may be responding. Furthermore, when collecting data for use in a CCA, it can also be extremely beneficial to share with industry some insight into what requirements are the most important to the Air Force or a draft set of capability requirements (Draft CDD). Being transparent helps the industrial base better understand what is important to the Air Force and is likely to improve the quality of responses received from the initial solicitation. Below are items that should be addressed in the GR&As:

- When the formal responses will be due
- Format in which responses are submitted
- Level of detail for the data requested
- Who will have access to the data
- Rules identified for handling data for non-government personnel
- How the data will be used by the program
- Work with Contracting Officer to ensure an Organizational Conflict of Interest (OCI) does not exist
- Acknowledge that data will be properly safeguarded in accordance with markings
- Any other topics unique to a program situation

Please see Appendix C for an example of the GR&As one previous program included with their RFI.

Considerations:

- Determine the most appropriate means/media for issuing the request. Typically done through FedBiz Ops but make sure to consult with a Contracting Officer first
- Attach GR&As to a solicitation
- Be as detailed as possible with the request and GR&As
- Consider including templates when appropriate
- Specifically address how information will be protected/safegaurded
- Provide Air Force data, such as a value hierarchy or draft requirements document, that will provide additional insight to the industrial base and improve the quality of the responses received
- Recognize that different contractors may have different concerns

Partnering with Industry

It is important to point out that the communication loop between government and industry is often continuous. Back and forth dialogue and data-sharing is expected and will help better define the cost capability tradespace. This serves to get industry thinking early about the most critical parts of the program the government is preparing to launch. Increased transparency when communicating with industry should be part of the market investigation plan.

Considerations:

- Periodic press releases
- Publicize technology needs
- Conduct AF/Industry Independent Research and Development (IR&D) exchange meetings
- Conduct Post-Analysis of Alternatives (AoA) Industry Day
- Budget for early study money
- Consider non-traditional sources of information from small business

2.4.6 Establish Source Database

The culmination of this step is the establishment of a source database. This database should be tailored to the program needs. At a minimum the database should have sufficiently detailed records to convey the source information to others and provide references to records to update or recreate information as needed.

Considerations:

- The source database will age and should be kept current
- The elements of the database should be tailored to the program circumstances and the information/data needed
- Place the database under "configuration control" to make sure that changes to it are authorized and appropriate
- Separate or controlled portions of the database may need to be established to protect proprietary or classified data
- Establish local work practice to safeguard and anonymize data (see Appendix E for example)

2.5 Step 3 – Evaluate Source Information/Data

The program office collects information/data from industry sources. Using the captured information/data from industry, the program office reviews and analyzes with the broader CCA Team. Following a thorough analysis by the team, the information is organized for use as part of the CCA.

2.5.1. Collect Relevant Information

The objective of this task is to ensure all of the information/data has been received in the format requested and augment that data with any existing DoD owned data. In this task, the information/data requested in the previous step is captured by the system program office, typically by the contracting officer, via whatever media was specified. The GR&As should indicate the date, the media, and the format of the responses. Confirmation of all expected responses should be made by the required date. In many cases it may be prudent to also collect similar government owned data to augment the analysis performed in the following steps. Sources of government-owned cost data may include the Defense Cost Analysis Repository Center (DCARC), Air Force Cost Analysis Agency (AFCAA) Cost Repository, and local cost staff libraries.

Considerations:

- Get a heading check from individual contractors to see if they are preparing a response
- Periodically check for response submissions
- Follow up with contractors if responses are not received by required date
- Make sure the responses complied with the GR&As

2.5.2. Review and Analyze Data with CCA Team

Once all of the requested information/data has been collected, it is now time for the broader CCA Team to conduct a review and analysis of the data. All the appropriate team members

must be included in this review and analysis. Typically, the systems engineer, program manager, cost analyst, logisticians, operations research analyst, requirements sponsor and user would all be key players in this review and analysis. The team will want to ensure the data is complete, correct, and sufficient to support the intended tradespace analysis in the CCA. The team will also want to ensure that each response is consistent in properly following the GR&As (i.e. incorporated the identified risk levels into cost data, the same assumptions were used, etc.). Make sure the requirements sponsor and user understand and agree with the impact that changes in requirements will have on operational capability and make sure the program office personnel understand the impact changes in requirements will have on the cost, performance, schedule and risk of the acquisition program. This may require a comparison to historical data to determine the reliability/believability of the data received.

The overall goal of this step is to make sure the information received is what was asked for and that the data can be used as intended in the CCA to refine the requirement. If either one of these conditions do not exist the team will likely need to conduct some follow-up research.

Considerations:

- Construct the right team to review the information/data – include any SMEs that are necessary
- SMEs involvement on team with respect to potential OCIs
- Make sure the responses properly followed the GR&As
- Determine if the responses received can be compared on an “apples-to-apples” basis
- Understand how the data will be used to evaluate tradeoffs during the CCA
- Requirement Sponsor/User should understand what this data means to the operational capability being acquired and program office personnel understand what this data means to cost/schedule/risk/performance
- Analysis should identify if any contractor biases have been included in any or all responses (i.e. contractors tend to understate cost data and overstate operational capability/performance)
- Understand the differences in the level of fidelity in the data you receive (ROM estimate versus an estimate based on historical actuals)
- Conduct follow-up research if the requested data was not received or the data/information can not be used in the intended manner

2.5.3. Organize Data for CCA

The objective of this task is to make the information/data collected ready for use in the CCA. This may involve data conditioning or normalization and the data should be organized into a logical order. This task may be delayed if additional follow-up research is required.

Considerations:

- The team should place the data under version control. Recommend stipulating the use of EIM/Sharepoint in which access is granted on an as-needed basis.
- This is the final opportunity for the team to examine and challenge the information/data received from industry that will be incorporated into the CCA

2.6 Step 4 – Utilize Data in CCA

Steps 1 through 3 initiate and execute the engagement with industry and conclude with the collected, organized and analyzed industry data. Step 4 is where that data is used in the CCA. This section of the guidebook is not intended to be a "how-to" for conducting CCA. Rather, the intent is to reiterate that this process is part of a much larger CCA effort that extends throughout the life of the program. For more information on how-to conduct CCA reference the CCA Handbook and CCA training materials maintained by AFLCMC/OZA.

2.6.1 Set Up CCA In Support of the Desired Outcomes

The General Guidance section of this guidebook identifies several of the most common desired outcomes of this engagement with industry process. These desired outcomes were based on the findings of the CCA Pilot Programs and are not intended to be all-inclusive. They are intended to be thought-provoking and help teams see how beneficial additional insights from industry counterparts can be to the tradeoff analysis. An important point to reiterate is that this G-IEP supports a larger CCA effort, which should have a very different desired outcome. As emphasized throughout this guidebook, the goal of CCA is to better inform decision-making, and the CCA Team should have a very thorough understanding of what decisions the CCA is informing. Just as the case with acquisition programs, no two CCAs will be identical, and the information solicited should always be in support of the better infoming decisions. Do top cost drivers need to be identified to examine the impact of a reduction to those requirements in order to make the program more affordable? Did a program's budget get cut and need to reduce those requirements that have the least impact on operational capability? Is additional information wanted on how slight changes in operational capability will impact system design, or cost/schedule/performance? What is the optimal balance between affordability and operational capability? All of the information gathered from industry sources should support the desired outcomes of the CCA, and in one form or another, support improved AF decision-making.

2.6.2 Conduct CCA

As previously stated, output from a CCA can take many different forms and support a wide variety of AF interests. It is important to note, however, that appropriate analytic rigor needs to be included in the CCA. Input of data from various sources (e.g., effectiveness, cost,

performance, risk) needs to be carefully constructed together in order for the CCA to be analytically sound and to support a cohesive narrative to compliment the analysis. For more information on how to conduct a CCA please reference the CCA Handbook and CCA training materials maintained by AFLCMC/OZA.

2.6.3 Use CCA to Improve Decision-Making

The ultimate goal of CCA is to provide better information that improves AF decision-making. Appendix A illustrates the various Decision Points at which CCA needs to be presented to inform senior leader decision-making. The JCIDS Manual specifically states that "Joint Staff Gatekeepers may reject capability requirements documents if documents….do not enable substantive discussion of the capability requirements and associated tradeoffs in life cycle cost, schedule, performance a, and procurement quantities in the setting of capability requirements." Furthermore, AFI 10-601 states, "Lead Command/CFLI in conjunction with the Implementing Command, produces and presents cost capability analysis, provides results at all requirements and acquisition forums." Joint Staff and Air Force leadership recognize the importance of the tradeoff analysis that CCA provides and require it to improve decision making at the highest levels.

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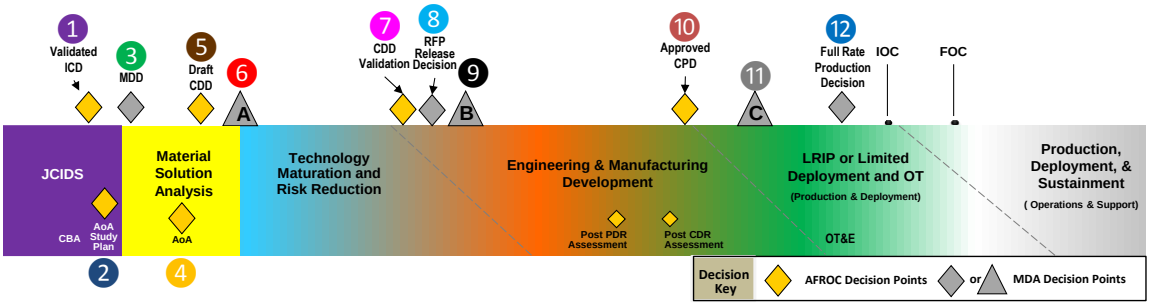
Appendix A – Decision Points and CCA Phases

The CCA decision framework identifies 12 distinct requirements and acquisition decision points as shown in Figure 1 below.



Decision Point	Decision	AF Decision Maker*	DoD Decision Maker*
1 ◆	ICD Validation	AFROC	JROC
2 ◆	Approve AoA Study Plan	AFROC	CAPE
3 ◆	Material Development Decision	MDA	MDA
4 ◆	Approve AoA Results	AFROC	MDA and CAPE
5 ◆	Approve Draft CDD	AFROC	JROC or JCB
6 ▲	Approve Milestone A	MDA	MDA
7 ◆	Approve CDD	AFROC	JROC or JCB
8 ◆	Approve Release of RFP	MDA	MDA
9 ▲	Approve Milestone B	MDA	MDA
10 ◆	Approve CPD	AFROC	JROC or JCB
11 ▲	Approve Milestone C	MDA	MDA
12 ◆	Approve FRP	MDA	MDA

* Final decision maker, other reviews may occur prior to final decision, i.e. AFRRG RSR for AF)

Decision Key: ◆ AFROC Decision Points or ▲ MDA Decision Points

Figure 1 – CCA Decision Framework (CCADF) Decision Points

The following is a summary of the twelve decision points; the objective of this summary is to give a sense of the types of questions needing to be answered in the CCA, and therefore the type of information/data that is needed to answer the questions. This is just a summary; detailed questions and information requirements for each decision point are outlined in the CCA handbook.

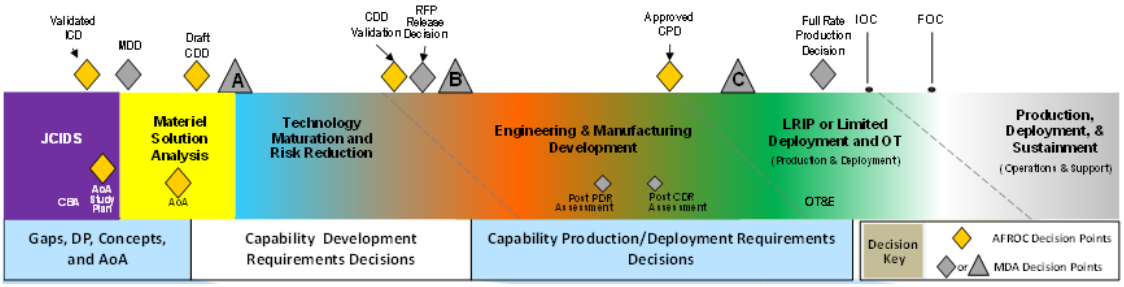


Figure 2 – CCA Decision Framework Summary Phases

Gaps, DP, Concepts and AoA Phase

The Gaps, DP, Concepts and AoA phase includes decision point's ❶ - ❹ (ICD Validation, Approve AoA Study Plan, Material Development Decision, and Approve AoA Results), shown in Figure 2, and is critical to evolving an affordable and mission effective set of requirements.

Overarching questions should be asked during this phase include the following:

- Are the capability gaps prioritized? What is the military value as operational capability is increased (or decreased) for each gap?
- What tradeoffs between cost, schedule and capability will be evaluated during the AoA?
- For the preferred options, what are the primary drivers of cost, schedule and risk?
- What is the preferred concept? Is it cost effective? Does it fit within the affordability goals?

Specific questions and suggested information needed to answer these questions can be found in the CCA Handbook.

Capability Development Requirements Decisions Phase

This phase includes decision points ❺ - ❾ (Approve Draft CDD, Approve Milestone A, Approve CDD, Approve Release of RFP, and Approve Milestone B) and is the phase that refines the requirements that will be included in the EMD contract.

Overarching questions asked during this phase include the following:

- What capability development requirements are the primary drivers of cost, schedule, and for this program?
- What tradeoffs between cost, schedule, capability, and risk were considered in determining these requirements and the resulting material solution?
- How have affordability goals and constraints been included in the program and how will they be achieved?

Specific questions and suggested information needed to answer these questions can be found in the CCA Handbook.

Capability Production/Deployment Requirements Decisions Phase

This phase includes decision points 10 -12 (Approve CPD, Approve Milestone C, and Approve FRP) and is the phase locking down the production and deployment requirements.

Overarching questions asked during this phase include the following:

- What operational requirements in the CPD are the primary cost drivers? Are they subject to change as a result of new validated threats or Operation Test & Evaluation (OT&E) results?
- How were tradeoffs between cost, schedule and capability considered in determining these requirements?
-
- How have affordability goals and constraints been included in the program and how will they be achieved?

Specific questions and suggested information needed to answer these questions can be found in the CCA handbook.

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Appendix B – Data Collection Spreadsheet Example

Removed for Distribution A

Appendix C – Example Ground Rules and Assumptions

Removed for Distribution A

Appendix D – Memos from OSD

Removed for Distribution A

Appendix E – Local workplace example for safeguarding proprietary data

Removed for Distribution A

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Appendix F – Example of Pre-MS A Program Office Engagement with Industry to Inform Requirements

1) Issued an RFI outlining user requirements (draft KPP/KSAs) to find out who was interested in participating in program development.

2) Held Industry Day with potential contractors (prime and subs) to clarify any questions concerning requirements, expectations, etc.

3) Put serious contractors to include subs on contract for a study (RDT&E funded).

    a. Included several CDRLs outlining expectations and deliverable in the Engineering and Cost areas.

        i. Held several interim meetings with contractors as heading checks before deliverables (PM, EN, Cost were sometimes separate meetings).

        ii. Deliverables (not all encompassing) included:

            1. Engineering concepts
            2. Development Plans
            3. Technology Maturity Discussions
            4. Development/Production Schedule
            5. Cost Estimate
            6. Basis of Estimates
            7. Top 3 Cost Drivers
            8. Cost driver recognized by the government
            9. Risk Management Plan

        iii. Scheduled interim drops to ensure contractor was on the correct path in meeting requirement.

        iv. Established team of knowledgeable government persons that understood which deliverables are important and which are not.

    b. Specific Period of Performance identified and agreed upon.

4) Created Integrated Product Team (IPT) to evaluate the deliverable, understand the technical solutions, and understand the programmatic risks to the contractor deliverable.

    a. Consisted of PM, EN, LG, FM, and Cost personnel.

        i. The cost person needed to understand the technical solutions in order to evaluate and create cost estimates.

b. Government Teams performed the analysis on the contractor deliverables and met to discuss the results with the contractors individually for the Technical and Cost Areas.

    i. Conducted separate meetings, but there was some cross-over of participants from the contractor and government sides.

c. The basic interaction was similar to a pre-Source Selection environment, so there was no sharing of data with other contractors (unless there was some collaboration amongst themselves, Gov't was not facilitating collaboration).

    i. This eliminated the concern of sharing proprietary data.

d. Identified risks for the contractor materiel solutions.

    i. Cost folks could not assign risk to a program without the assistance of PM and EN personnel. This required an IPT.

5) The output was providing inputs to the draft CDD and developing of Program Office Estimate.